

Fermilab CD/DCI Tech Note

Cable, UTP-TN-006.00

The following are construction requirements for Fermilab Computing Division Data Communication's unshielded twisted pair (UTP) Enhanced [Category 5e \(Cat5e\)](#) and [Category 6 \(Cat6\)](#) jack cords. Users should purchase cords from recommended vendors only, to ensure compliance with tech notes. Call Fermi CD/Data Comm. for a list of qualified vendors or visit our web page at <http://computing.fnal.gov/dci/Document-pdf-Files/Cable-Assy-Houses.pdf>.

Use the Fermi part number(s) on Purchase Requests when ordering cables, unless directed otherwise. (*Red sidebar indicates most recent change to this Tech Note. Orange sidebar indicates previous change.*)



1. CABLE

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a.) Solid Wire

- 1.) Standard solid PVC Category 6 jack cords must be made with green Belden 7851A cable.
- 2.) Standard solid PLN Category 6 jack cords must be made with green Belden 7852A cable.

2. CONNECTORS

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a.) Jack Modules

- 1.) Standard RJ45 jacks for Cat6 solid-wire must be Panduit Mini-Com TX6 PLUS part number CJ688TP.
- 2.) When requested, RJ45 jacks for Cat6 solid-wire shall be Siemon 10GMX.

3. DESIGN

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a.) Straight-Through (Strait-Thru)

- 1.) A straight-through jack cord wired EIA568A must have RJ45 pins 1, 2, 3, 4, 5, 6, 7, & 8 on one end connected to pins 1, 2, 3, 4, 5, 6, 7, & 8 on the other end respectively. Pins 1 & 2, 3 & 6, 4 & 5 and 7 & 8 must be twisted pairs end-to-end with white-blue on pin 5, blue-white on pin 4, white-orange on pin 3, orange-white on pin 6, white-green on pin 1, green-white on pin 2, white-brown on pin 7 and brown-white on pin 8.
- 2.) A straight-through patch cord wired EIA568B must have RJ45 pins 1, 2, 3, 4, 5, 6, 7, & 8 on one end must connect to pins 1, 2, 3, 4, 5, 6, 7, & 8 on the other end respectively. Pins 1 & 2, 3 & 6, 4 & 5 and 7 & 8 must be twisted pairs end-to-end with white-blue on pin 5, blue-white on pin 4, white-orange on pin 1, orange-white on pin 2, white-green on pin 3, green-white on pin 6, white-brown on pin 7 and brown-white on pin 8.

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4. PERFORMANCE

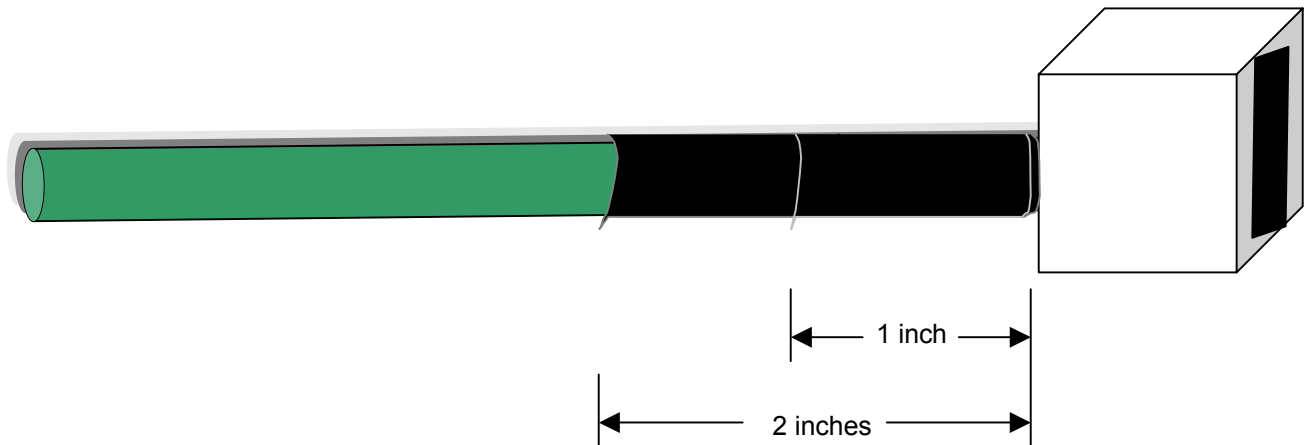
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- a.) All Cat6 jack cords must meet ANSI/TIA/EIA-568-B.2-1 performance specifications.

5. MECHANICAL

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- a.) Must adhere to Panduit Installation Instructions PN307C
<http://www.panduit.com/products/InstallationInstructions/068772.pdf>.
- b.) Jacket should be cut-back 1" from stuffer cap. Shrink sleeve should cover exposed twisted pairs, restoring then in spline, over lapping end of jacket to stuffer cap as shown below.



6. LABELING

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- a.) Cables must be labeled flag-style, three inches from the RJ45 connector, on both ends.
- b.) All cable labels must contain the following information: the vendor name, the vendor part number and a unique serial number. Serial numbers must be in one of the following formats:
 - 1.) Purchase Orders
The serial number shall be derived from the Purchase Order number and be in the following format: XXX-YYYYYY, where XXX is a number that begins from 001 and increments by 1 up to the total number of cables being made by that vendor for that Purchase Order (regardless of whether the Purchase Order includes other assembled cables which are not Cat6 cords) and YYYYYY is the Purchase Order number.

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2.) Procard Orders - Computing Division

The serial number shall be derived from the ProCard number and be in the following format: SN: XXX-PRNZZZZZ, where XXX is a number that begins from 001 and increments by 1 up to the total number of cables being made by that vendor for that ProCard Order (regardless of whether the ProCard Order includes other assembled cables which are not Cat6 cords); ZZZZZ is the PRN number of the ProCard order.

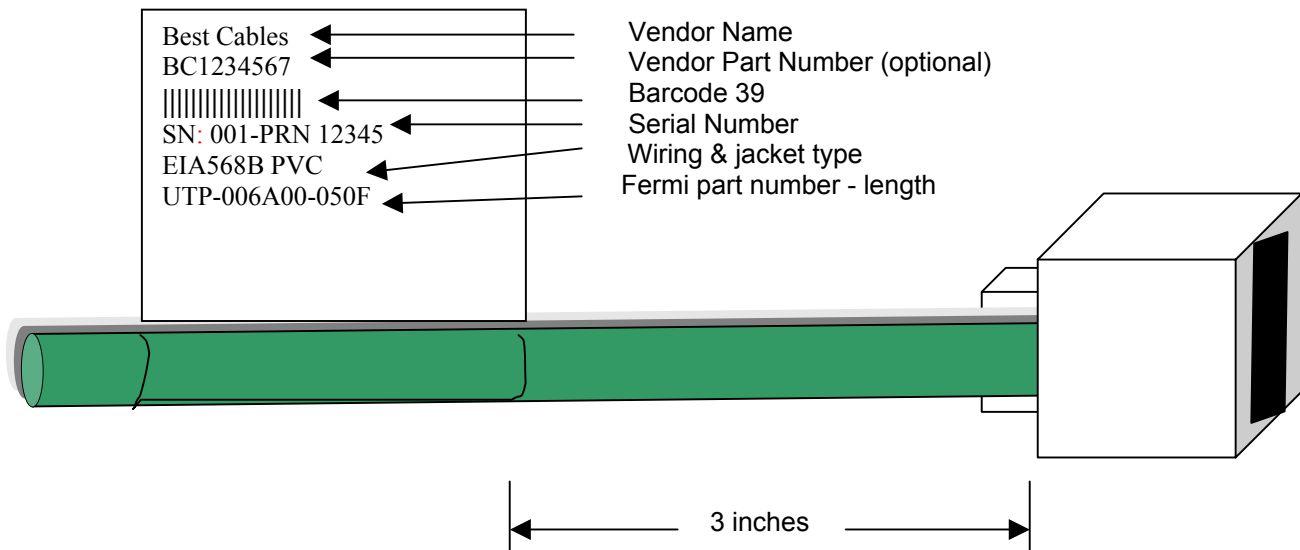
3.) Procard Orders - Non-Computing Division

The serial number shall be derived from the ProCard number and be in the following format: XXX-ZZZZ-MMDDYY, where XXX is a number that begins from 001 and increments by 1 up to the total number of cables being made by that vendor for that ProCard Order (regardless of whether the ProCard Order includes other assembled cables which are not Cat6); ZZZZ are the last four digits of the ProCard number and MMDDYY is the month, day and year of the ProCard order.

c.) Vendors shall keep track of order numbers so that they do not get reused in future serial numbers, thereby preventing any two cables from having the same serial number.

d.) The label shall also include the cable's wiring and category, i.e. "EIA568A Cat6" (or "EIA568B Cat6") and the appropriate part number (Fermi number) dash length of the cable in feet (F) or meters (M).

The following is an example of the label:



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- e.) The labels must be Kroy 2556701, Panduit LS5-10 or equivalent.
- f.) The labels must be laminated such that the information on the labels does not smear, fade or become unreadable under normal handling and installation conditions.
- g.) The font size **must** be 8-point or greater. Tiny, blotchy, smeared or otherwise unreadable characters will not be accepted.

7. FERMI PART NUMBERS

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Fermilab#	Description
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UTP-006A00	Cable,UTP,RJ45-RJ45, Jacks, EIA568A,Solid,Cat6,PVC (Cable: 1.a.1. Connectors: 2.a.1. Design: 3.a.1 Mech: 5.a)
UTP-006A01	Cable,UTP,RJ45-RJ45, Jacks, EIA568A,Solid,Cat6,PLN (Cable: 1.a.2. Connectors: 2.a.1. Design: 3.a.1 Mech: 5.a)
UTP-006A02	Cable,UTP,RJ45-RJ45, Jacks, EIA568A,Solid,Cat6,PVC (Cable: 1.a.1. Connectors: 2.a.2. Design: 3.a.1 Mech: 5.b)
UTP-006A03	Cable,UTP,RJ45-RJ45, Jacks, EIA568A,Solid,Cat6,PLN (Cable: 1.a.2. Connectors: 2.a.2. Design: 3.a.1 Mech: 5.b)
UTP-006B00	Cable,UTP,RJ45-RJ45, Jacks, EIA568B,Solid,Cat6,PVC (Cable: 1.a.1. Connectors: 2.a.1. Design: 3.a.2 Mech: 5.a)
UTP-006B01	Cable,UTP,RJ45-RJ45, Jacks, EIA568B,Solid,Cat6,PLN (Cable: 1.a.2. Connectors: 2.a.1. Design: 3.a.2 Mech: 5.a)
UTP-006B02	Cable,UTP,RJ45-RJ45, Jacks, EIA568B,Solid,Cat6,PVC (Cable: 1.a.1. Connectors: 2.a.2. Design: 3.a.2 Mech: 5.b)
UTP-006B03	Cable,UTP,RJ45-RJ45, Jacks, EIA568B,Solid,Cat6,PLN (Cable: 1.a.2. Connectors: 2.a.2. Design: 3.a.2 Mech: 5.b)